

Fairbanks Biodiesel Cooperative

A young cooperative to take advantage of local waste veggie oil

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Principles

- “To encourage recycling and sustainable development in the Fairbanks community through the local production and use of biodiesel from waste vegetable oil, or derived from Alaskan grown agricultural products.”

What is Waste Veggie Oil? (WVO)

- Typically produced by area restaurants
- Mixture of fats and oils
- Goes into 55 gallon barrels or 5 gallon jugs
- “wet” and very dirty
- High BTU content

Biodiesel



- Biodiesel is a thinner oil than WVO
- Transesterification reaction removes the glycerine
- Reaction requires an alcohol

Biodiesel vs WVO

- Biodiesel is much more expensive than WVO
- WVO has better lubricating capacity, maybe more deposits
- Biodiesel has a lower freezing point than WVO
- Different uses

Uses

- Up to 5% biodiesel
- Lubrication for low-sulfur diesel
- Reduced particulates, sulfur, more NOx
- Boilers-some indication of success
- Testing-CCHRC, boilers
- WVO use requires conversion
- 100% BD still requires conversion

How to Make Biodiesel

- Can use commonly available materials
- Water heater, pumps, filtration
- Should “wash” the biodiesel
- Additives a huge opportunity
- Methanol=expensive!!! (can use ethanol)
- Must neutralize acids with base

Our process

- Rough filter and collect
- Do a “tester” to determine acidity
- Add methanol, mix, and react
- ~1.5 days later, let settle, drain glycerin
- Fine filter and wash with water

Our Setup



- 2 water tanks
- Pump Circ
- ABS Alaskan donated space

Future of Biodiesel in Fairbanks

- Room for growth ~7000 gallons of WVO per month in Fairbanks
- 10,000 gallons WVO/month available from Anchorage in winter months
- Our setup is a “manual” processor
- Improvements in reactor process

Cost

- Largest cost of biodiesel is methanol-- \$4.42/gallon, 20%
- Can reduce methanol content
- Filtration also expensive ~\$.15/gallon biodiesel
- 20% of initial WVO lost as glycerin
- Expecting \$2.10 per gallon

Cooperative Structure

- Limited to 10 members
- Must work to purchase WVO or biodiesel
- Sell WVO for \$.50-\$.75 per gallon
- Every member can purchase ~16 gallons/month initially
- \$100 membership cost

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Issues With WVO over standard Veggie Oil

- In winter, WVO is solid
- Pick-up network and trucks
- Small scale is easy, larger scale more expensive
- Quality--filtration and washing
- ~87% Carbon-neutral, veggie oil less

Thank you

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